

## THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS

1. A compound electrode for use in electrochemical processes comprising:  
5 an inner electrical conductor electrode contained in an outer electrical conductor electrode,  
an electrically conducting material in contact with and sandwiched between the inner electrode and the outer electrode and electrical leads to the inner and outer electrodes for inlet and outlet of electrons.
- 10 2. A compound electrode as in Claim 1 wherein the electrically conducting material in contact with and sandwiched between the inner electrode and the outer electrode is a liquid.
- 15 3. A compound electrode as in Claim 1 wherein the electrically conducting material in contact with and sandwiched between the inner electrode and the outer electrode is a gel.
- 20 4. A compound electrode as in Claim 1 wherein the electrically conducting material in contact with and sandwiched between the inner electrode and the outer electrode is an electrolytic membrane.
- 25 5. A compound electrode as in Claim 1 wherein an outer surface of the outer electrode has a high specific surface area.
6. A compound electrode as in Claim 1 wherein an outer surface of the outer electrode is coated with material to protect the electrode or to act as a catalyst.
- 30 7. An electrochemical cell having an anode cell and a cathode cell, a compound electrode being the anode in the anode cell and a compound electrode being the cathode in the cathode cell, wherein each of the compound electrodes includes an

inner electrical conductor electrode contained in an outer electrical conductor electrode and an electrically conducting material in contact with and sandwiched between the inner electrode and the outer electrode, a positive terminal of a DC power source connected to the outer electrode of the anode electrode and the negative terminal to the outer electrode of the cathode electrode, the inner electrodes of the anode and the cathode being connected to each other by a wire conductor, means to deliver electrolyte to the anode cell and means to transfer discharge from the anode cell to the cathode cell and means to transfer the discharge of the cathode cell to the anode cell.

8. A unipolar activation cell having an anode cell and a cathode cell, a compound electrode being the anode electrode in the anode cell and a compound electrode being the cathode electrode in the cathode cell, wherein each of the compound electrodes includes an inner electrical conductor electrode contained in an outer electrical conductor electrode and an electrically conducting material in contact with and sandwiched between the inner electrode and the outer electrode, a positive terminal of a DC power source connected to the outer electrode of the anode electrode and the negative terminal to the outer electrode of the cathode electrode, the inner electrodes of the anode and the cathode being connected to each other by a wire conductor, means to supply an neutral anolyte to the anode cell and means to withdraw activated anolyte from the anode cell and means to supply a neutral catholyte to the cathode cell and means to withdraw activated catholyte from the cathode cell.

9. A unipolar activation cell having a compound electrode, wherein the compound electrode includes a cylindrical inner electrical conductor electrode a cylindrical outer electrical conductor electrode surrounding the inner electrode and an electrically conducting material in contact with and sandwiched between the inner electrode and the outer electrode, with an anode cell within the cylindrical inner electrode the compound electrode and a cathode cell surrounding the cylindrical outer electrical conductor electrode, means to supply an neutral anolyte to

the anode cell and means to withdraw activated anolyte from the anode cell and means to supply an neutral catholyte to the cathode cell and means to withdraw activated catholyte from the cathode cell, a positive terminal of a DC power source connected to the inner cylinder electrode and a negative terminal of the DC power source connected to the outer electrode cylinder.

10. A unipolar activation cell as in claim 9 further including insulating end caps for the cylindrical inner electrode and means to supply the neutral anolyte tangentially to the anode cell and means to withdraw activated anolyte tangentially from the anode cell.

11. A fuel cell having an anode cell and a cathode cell, a compound electrode being the anode in the anode cell and a compound electrode being the cathode in the cathode cell, wherein each of the compound electrodes includes an inner electrical conductor electrode contained in an outer electrical conductor electrode and an electrically conducting material in contact with and sandwiched between the inner electrode and the outer electrode, an electrical load connected to the outer electrode of the anode electrode and the negative terminal to the outer electrode of the cathode electrode, the inner electrodes of the anode and the cathode being connected by a wire conductor, means to deliver a first fuel to the anode cell and an oxidant to the cathode cell and means to transfer discharge from the anode cell to the cathode cell and means to transfer the discharge of the cathode cell to the anode cell.

12. A fuel cell as in Claim 11 wherein the first fuel is hydrogen and the oxidant is oxygen.